Meeting Summary
SSGIC Web Design Meeting and Project Update
November 8-9, 2001

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Meeting Location:
Kern Country Fire Department
Olive Drive Fire Training Facility
5642 Victor Street
Bakersfield, CA, 93308

Participants:

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Meeting Purpose:

1) Update SSGIC participants on progress of different workgroups including project management, data development, analysis, and interagency fuels planning.
2) Develop or refine action plans for several sub-initiatives including fuels group, Values at Risk, and data development.
3) Orient participants to appropriate Web Technologies that will serve the needs of the SSGIC. Participants develop a framework for distributing maps, geospatial data, and other information off an SSGIC Web Site.

Project Group Summaries:

SSGIC Overview and Data Development – Pat Lineback.
-Karen Holmstrom was hired for the SSGIC GIS Technician position and is working out of the Sequoia NF Office in Porterville. Lew Jump is her supervisor. Karen has started processing data and we are making progress.
-The SSGIC Project Plan was sent to the Principal Investigators. Copies of the most current Project Plan were distributed to all participants
-An SSGIC workshop was conducted in Sacramento in August and a Web Design Architecture document was created. This document identifies a variety of Internet Map Serving Options for the SSGIC ranging from simple to complex.
-The Interagency Agreement draft was reviewed by the Department of Interior Solicitor and is ready to be reviewed by the other four SSGIC stakeholder agencies. Main point of contact at the NPS regional office is Jamie Sherrill.
-Last summer, Pat Lineback gave a presentation at Wuksachi to the Sierra Federal Mangers group was well received. They were very interested in the SSGIC and seem supportive, especially over the long haul.
-On October 27, Pat Lineback gave a presentation to the Tule/Kaweah Watershed Council, a diverse group that includes irrigation districts, farm bureaus, and land managers. They are very interested in gaining access to the data the SSGIC is creating.
Public access to the data is an important topic that needs to be discussed by the agency participants.

Analysis - Jeff Manley
-Jeff provided an overview from the Analysis group and presented a summary of the May 2000 meeting including a review of the process flowchart worked out at that meeting.
-Tony Caprio is researching fire return intervals for all the vegetation types within the SSGIC boundaries. Pat Lineback brought up the need to incorporate a reliability index that reflects our confidence in fire return intervals by area and vegetation type.
-Robin Marose emphasized that variables other than fire history and vegetation should be factored into the FRID analyses such as grazed grasslands, mechanical thinning, and disease mortality such as tussock moth. Robin felt that this was a deficiency of the FRID model. There was consensus that we would start "simple" and try and incorporate other variables in FRID analysis. There will be limitations on the use and value of FRID based on geographic location and its current management.
-Don Carlton is still the potential lead for FLAMMAP and has indicated his interest.
-It is important to prioritize some of our data development requirements based on the fire analyses data needs.
-On October 25, the Asset Analyzer group had a conference call but was missing participation from the Forest Service, BLM, and Kern County. Robin Marose states that the further development of several identified values will be breaking new ground.
-The NPS, through the Urban Interface funding initiative, has proposed establishment of a three year term GS-11 Project Coordinator position for the SSGIC. The USFS will be filling several new permanent positions with at least one position heavily involved with some SSGIC coordination activities.

Project Management - Dorothy Albright
-Dorothy attended the Joint Fire Sciences Program update meeting last October in Reno and provided a project update to the participants. There was much support and acknowledgement that the SSGIC does need a project manager.
-SSGIC has multiple initiatives going on simultaneously. We are and doing many of the things that are being researched and studied by other JFS projects. SSGIC could split off into many separate projects including ARCIMS and methods of collaboration.
-Dorothy identified USGS employee Erin McCormick in Denver who has offered assistance with project management document editing.
-UC Davis wants to implement Project Central for the SSGIC. Project Central is a project management support tool from Microsoft that allows for collaboration over the web. We lost our project lead at UC Davis, so we've lost some time getting another person up-to-speed on this project. They've loaded Project Central on a server at Davis, but that's as far as its gone. Ken Blonski, retired USFS employee and now part of UC extension is helping support this initiative.

Fuels Planning - Aaron Gelobter

This group will be starting on the fuels layer development and will work with the analysis group. Some of their scheduled items may be pushed back because of the slow start by the Analysis group.

New or Unresolved Issues – Pat Lineback
- It was agreed that all project management leads (Lineback, Manley, Gelobter, and Albright) would update their action plans before Christmas. Updates should be sent to Pat Lineback.
-Pat Lineback suggested that a watershed coordinator be chosen to represent each watershed to serve as a data development catalyst. A decision on this was postponed because of lack of a clear need.
-The Interagency Agreement was distributed which the DOI solicitor has reviewed and approved. It was noted that the solicitor changed the authority for the agreement to the "Reciprocal Fire Protection Act". The group agreed to make 2 modifications. The first change is to remove the "or This Agreement may be terminated by mutual…" clause from Article IX. The second change is to only list the position titles under Key Officials in Article V. The agencies agreed to review the document by 12/15/2000 and report any problems back to Pat Lineback. Hopefully at that point we can modify the agreement and finalize it including acquiring signatures.

Three break-out groups met for 20 minutes each to identify their goals and issues so the entire group could address them. The groups were: Data, Fuels, & Values at Risk. The group leads are responsible for updating the action plan in the next 30 days.

FUELS GROUP

GOALS:
1) Develop a fuels model map
2) Develop protocols to maintain the fuel model map
3) Define how the Fuel models will be "transitioned" and change with disturbance
4) Define data available.
   a) Sequoia Forest has a fuel model map that is a simple crosswalk from vegetation to fuel model (CalVeg).
   b) The State Fire Plan has a crosswalk done for the entire state. One hole is Kern County. It is based on best available vegetation data, mostly GAP data.
   c) Sierra Nevada Framework crosswalk. This is a hybrid consisting of data from the NPS, USFS, CDF.
   d) Sequoia & Kings Canyon National Parks has a crosswalk to fuels that consists of vegetation and fire return interval departure.

1. Develop a Fuels Model Map
-First Priority task
-Long-term, we need to develop an interagency fuel standard
-One of the goals of the SSGIC is to develop interagency fuel models and the protocol of crosswalking methods.
** All agencies should get their fuel models to Karen Holmstrom along with metadata.

2. Develop protocols to maintain the fuel model map and 3. Define how the Fuel models will be "transitioned" and change with disturbance.
These factors affect fuel model and its change trajectory:
-Vegetation to Fuel Model Crosswalk
-Fire Return Interval Departure (FRID) – Fire & Pre-Recorded History
-Mechanical Treatments
-Animal Treatments – grazing, etc.
-Sapsis stuff - Crown Density, etc. – part of conditions; describes crown fire potential & ladder fuels
-Condition Class – national definition, somewhat like FRID but includes all treatments
-BAER – Intensity mapping. Burn intensity needs to be captured as standard operating procedure for fires so that fuel models can be changed.
-Change Detection – Lisa Levian has been working on this. Robin will talk to her about project. Data is generated every 5 years, maybe more often if funding available.

-The Fuels group will focus on goal #1 for now. No fuel model validation will happen through this initiative. Next year we can work on the maintenance and refinement. Pat may go after future funding to look at emerging technologies such as LIDAR.

-Eventually, the fuels group will establish a fuel maintenance development model and establish formal protocols.

-The fuels group will meet at Ash Mountain on December 12. Brent Skaggs and Aaron Gelobter are the leads.

VALUES AT RISK

GOALS:

1) Identify Values at Risk
   a) This is still in progress. Project leads are needed for each value.
2) Determine Ranking Methodology
   a) Location and value, susceptibility, habitat, etc.
3) Gather/Validate Data
4) Create Analysis Tools

-Robin Marose summarized Assets at Risk using hydrology as an example. Robin Marose distributed a copy of the table that summarized the Values at Risk Conference Call on October 25.
-USFS has extensive definitions for Recreation and Scenic values in terms of Visitor Use Days and Visual Quality Objectives (RPA).
-Project Leads assigned for Hydropower, Soil, Water Storage & Supply, Scenic, Range, Recreation, Structures, Non-game wildlife (biological), & Infrastructure.

-Archaeological sites – the group decided this was too sensitive too tackle for now.
Timber – these could be done through fuel models

Other Potential Research Projects for VAR's

- Firefighter Safety – this could be tied to hazard
- Human Life – access to roads issues, backpackers, etc.
- Urban Interface (Sapsis is working on something here)
   a) USFS buffers areas
   b) structures per acre; Sue Husari is working on density dependent resource allocation issue
   c) Rural Density – intermix areas
   d) State has used census block data, may not be detailed enough for rural areas
   e) Campgrounds/Concession trailers – how to account for areas without permanent residences
   f) Assessors Data – can be used to describe density of ownership of parcels

-Pat suggested an option of manually drawing and digitizing polygons around interface areas and assigning a value based on human population or presence or buildings in the area.
-Larry Vredenburg has parcel data for Kern County. To provide to Karen Holmstrom.

-Robin will send out a list of expectations for the leads. A conference call will be set up for December 5 to check on progress by project leads (this conference call was subsequently cancelled). The table below summarizes the priorities and leads for moving Values at Risk forward.

DATA GROUP

GOALS:

1) Phase I Interim Priorities – already identified
   a) Karen Holmstrom to give progress update (see report)
   b) Validate existing priorities
2) Identify Analysis Data Priorities
   a) Attributes by theme needed to support models
   b) FRID
   c) Asset Analyzer
   d) FLAMMAP
   e) Fire Occurrence Areas – point ignitions
   f) WFSI – Wildland Fire Susceptibility Index
3) Data Acquisition – problems and processes
   a) Canopy data

b) Condition class

We ran out of time, so not a lot of new decisions were made.
Powerlines are not yet a priority. This information is difficult to acquire and we may need a higher level contact to get this data.
No new data development should occur here.
Ignitions – send available data and methods to Karen Holmstrom
Vegetation – send existing data to Karen. Vegetation will be merged together from the different sources, but no crosswalks will be performed. The data will be managed as if it came from original source data, simply in one GIS layer.
Canopy – Same as vegetation. Data to be merged but not crosswalked. The fuels group will decide direction on this at early future meeting.
Fuel models - send existing data and models
Canopy cover – NPS & USFS has this, CDF has only GAP data
Special Management Zones – Phase II to be flushed out at local level and captured in values

Thursday, 11/9/2000

SSGIC Goal: Data is readily accessible and available.

The best location to have an SSGIC Web Site with supporting map services appears to be GEOMAC, a USGS site in Denver. An formal agreement will be established with USGS (POC is John Guthrie) to place hardware in Denver and receive limited support services from USGS. More to come on this and lots of decisions need to be made here.

Pacific Meridian Resources (PMR) consultant, Frank Schreiner gave a presentation on web issues that we should be considering. The majority of PMR's report is included below.

Pacific Meredian Resources Internet Mapping Workshop Summary Report - 11/9/2000

1.0 Introduction

This document summarizes the South Sierra Geographic Information Cooperative (SSGIC) internet mapping workshop that took place on November 8-9, 2000 at Kern County, CA. This workshop was attended by a number of multi-agency staff as well as consultants from USGS (Denver, CO) and Pacific Meridian Resources, Inc. (Emeryville, CA). The focus of the workshop was to define Internet based mapping alternatives and specifications for a geo-spatial data clearinghouse that will support multi-agency access for wildfire planning and data management.

1.1 Background

The primary objective of the SSGIC project is to create a spatial and attribute information system for coordinated wildfire data management and planning within an integrated Geographic Information System (GIS) framework. This project focuses on utilizing geographic information and related Internet technologies to overcome institutional barriers to interagency fuels and fire related data management within very large, diverse ecosystems. Landscape-scale planning is very difficult within ecologically complex ecosystems that are socially and politically tangled in an irregular pattern of land ownership with diverse management goals.

A seamless systems and data framework is one that provides consistent spatial information across boundaries regardless of agency jurisdictions. This is referred to as a *data clearinghouse*. It is typically beyond the means of any one agency to bridge this information gap and facilitate the development of an ecosystem-wide, wildland fuels-based spatial information management system. Accordingly, the SSGIC project is an interagency initiative that focuses on building a seamless spatial information database (including fuels) and management system to provide agencies with valuable incentives for partnering with other agencies. This initiative includes the gradual institutionalization of an ecosystem-based spatial information management system. Additionally, it includes joint data management protocols, standards, analyses, and spatial data distribution systems.

The development of an integrated Geographic Information System (GIS) framework based on utilizing the latest in Internet deployment approaches will provide updated, spatially-explicit information for planning and implementing fuels management and fire use programs in a consistent and effective manner. This seamless GIS framework will be usable for many other management applications including planning. One of the primary goals is to develop a GIS framework systems model that can be used by local participating agencies and other geographic areas that are multi-jurisdictional and grappling with the same geo-spatial issues and concerns as the southern and central Sierra Nevada land managers.

1.2 Workshop Description

An internet mapping workshop was held on November 8-9th, 2000 in the Kern County, CA office of the Kern County Fire Department. This workshop included participants from multiple agencies as well as consultants from the GIS industry.

The primary objectives of the workshop were to:

1. Provide SSGIC with sufficient information to implement a scalable Internet based GIS data clearinghouse for the duration of the SSGIC project.

2. Provide SSGIC with samples of existing sites that will allow the participants to view and discuss Data Clearinghouses, Data Warehouses and sites that use mapping as a primary function as well as mapping to augment the data source.

3. Break into groups to develop and understanding of who the customers are, what the SSGIC goals are for the short term, and what the general components of the web site should be.

1.3 SSGIC Conceptual Design

The SSGIC project was funded by the Joint Fire Sciences Program to develop a GIS based landscape scale framework for interagency wildland data and fuels management planning. The primary goals of the SSGIC systems are:

1. The most important spatial data for the prototype area is developed, accessible, and available via Internet technologies, referred to as a data clearinghouse.

2. Data utilization tools, such as ESRI's ArcIMS, are implemented to enhance and optimize use and modification of data and related digital output including mapping, data query, and data visualization.

3. Agencies are effectively collaborating making best use of existing and emerging information technologies that serves the key fire information needs of all participating agencies.

4. Standard business processes are developed that optimize long-term interagency information collaboration and cooperation, particularly relating to geo-spatial data.

5. Data utilization tools meet different user requirements and skill levels.

The SSGIC data clearinghouse system will provide the following capabilities to satisfy these goals:

1. provide FTP site capabilities to support download of spatial data
2. use of dynamic web pages integrated into a cohesive integrated design, with individual agencies having targeted responsibilities for maintenance and update of selected pages
3. provide an Internet based map server site using ESRI's Arc Internet Map Server (ArcIMS) software to provide access to both map and analysis data created by SSGIC
4. provide an Internet based application server to support data access, project management and collaboration software.

The SSGIC will be responsible for the development and management of the above-mentioned services. The SSGIC interagency group will manage the data clearinghouse. This would be a distributed system in which the provider site, i.e. USGS, stores the primary geo-spatial data based on watershed delineations and periodically sends or *replicates* selected data sets to a central site main server managed by a hosting agency (to be defined). The Central Site Main Server will be managed by a federal or state agency (USGS) and would serve large contiguous geographic areas with the data clearinghouse and related Internet mapping services.

2.0 Feedback from the group

This section summarizes the afternoon breakout session that took place. The goal of the afternoon session was to create a list of who the customers of the site were, what the goals for supporting those customers are and a general list of the functionality (components) required. Along with these statements a simple purpose statement was defined:
To make data readily available to other stakeholders.

2.1 Customer Definition

This section summarizes the findings of the workshop with regards to who the customers are and what the priority in accessing the site they are assigned. A customer is defined as anyone who will be either using the site to view data or will be contributing data to the site for others to view.

Table 1: SSGIC Customer Priority Categorization

Customer	Priority
SSGIC • GIS Technical Specialists • Fire Program Staff • Fire Managers	High
JFSP (Joint Fire Sciences Program)	High
Handicapped Persons online	High
Public Access • Fire • Non-Fire	 Medium Low
Incident Support • Fire • Non-Fire	 Medium Low
Secondary Organizations with Fire Component	*Medium*
Emergency Response - 911	Medium
Other SSGIS Agency Staff • Cultural Sites • Endangered Species, etc.	 Low Low
All other Secondary users • Watershed council, etc.	Low
Elected Officials	Low

2.2 Goals for Achieving Customer satisfaction

- Meta data input for when upload is processed
- Search and presentation of metadata
- Downloading of data
- Facilitation of interagency collaboration of accuracy and quality of data
- Facilitation of data standards that are common to all stakeholders
- Design and development to meet customers needs
- *Ability to query data structure and produce maps, reports based on geographical query*
- Ad banner revenue (future consideration to be cost neutral)
- Meets the requirements of the JFSP

2.3 Components of the site

2.3.1 General Components

Component	Priority

Upload	
• Simple Posting of data for future processing	High
• Documents for viewing	High
• Images (maps, photos, web cam, etc.)	High
• Security access	High
• Automated input into data warehouse	Low
• Tools (AML, Scripts, etc.)	Medium
Download	
• Disclaimer on all downloads	High
• Package data for internal stakeholders	High
• Tools	High
• Documents	High
• Standard Map products	High
• Images (maps, photos, web cam, etc.)	High
• Ad hoc query and download of results	Medium
• Packaged data for Public access	Low
Collaboration	
• Edit Notes (Spatial notes on map products)	High
• Non Spatial document collaboration	High
• Business documents	High
• MS Project Central (soon to be set as a standard)	High
• Net Meetings	Low
• Chat rooms	Low
• List servers / automated mail / messaging	Medium
Analysis Tools	
• Standard Analysis / Query tools (ARCIMS products)	High

• Custom Tools (One prototype to start with)	Medium
Admin Tools	
• User Accounts	High
• Reports (Useage, etc)	High
• Remote Administration of SDE and IMS	High
• Connect function (Who ya gonna call list)	High
• Contact list – general	High
• Stakeholders list	High
Hyperlinks	
• Other resources – RAWS data, hydro data, RSL data	High
Reference Materials (Help)	
• Online Documentation (Help)	High
• Site Map	High
• Search Engine	Low
• Navigation aide	Low
Standard Products	
• Fuels Map	High
• Project Plans	High
• Multi-year treatment plans (treatment maps)	High
• WFSI final map	High
• Final Analysis maps (products, can be jpeg's)	High
• Derived products from Standard analysis (TBD)	High
• Fire History maps	High
• Incident maps (Fire progression)	Medium
Security	
• Disclaimer	High

• Adherence to state and federal freedom of information acts	High
• Levels of access (privileges associated with logins)	High
• Legal Responsibility for accuracy and content of data	High
• On site security and backup – 24/7	High
• Disaster recovery plan	High
• Security assessment – discourage hackers	High

2.3.2 Spatial Datawarehouse with Map Products Configuration

- FTP based file server with disk array
- GUI web application built with Active Server Pages (ASP) to support point-and-click web download/upload capability
- Web application to accommodate basic metadata requirements for data upload
- Upload capability to support primary ESRI data formats, i.e. shape files, images, coverage's, in .zip format
- Basic query tools to support query of available data layers and metadata prior to download
- MS-Access to support user administration and meta-data management for web application
- Basic username/password security
- Additional Map Server (ArcIMS) hardware that will also host web server and web application
- Web application will be enhanced to provide ArcIMS mapping capabilities
- A viewing tool (software) will be required to ensure that data uploaded to the server is operational. ArcExplorer would be ideal for this due to no licensing cost.
- All data will be loaded into, and housed, in ArcSDE (Oracle) on the Data Server (file server)
- ArcSDE will support feature level data extraction and download

Spatial Data Warehousing – centralized repository of spatial data

Michigan Department of Natural Resources was listed as a good example, however I couldn't find anything about spatial data on their site. The King County, Washington State site is a good example.
http://dnr.metrokc.gov/topics/map/GIS.htm
Also the CDF Frap Site, but not for ArcIMS
http://frap.cdf.ca.gov/data/frapgisdata/select.asp

Web Issues to deal with: Security, Search engines, browse, download, upload, workflow management, processes.

ArcIMS – software that interacts with data and browser to display it.
1) Can have multiple instances of IMS on same server
2) Public can see different layers than SSGIC users
3) Can distribute load across processers
4) Can look at data on other servers. This is slower but may address storage issues
5) Distributed collaboration tools – map notes, markup layers

Training is essential to implementing ArcIMS

GEOMAC – Web based Wildland Fire Support – John Guthrie

http://geomac.usgs.gov or http://wildfire.usgs.gov

History - Geomac started as a request from NIFC during the 2000 fire season in the Great Basin area.

Processing GIS analysis over the web isn't where we want to go. Download the data and process locally is more reasonable. Frank Schreiner to issue report on web goals.

See King County site above for good disclaimer example. http://www.metrokc.gov/ddes/gis/parcel/disclaim.htm

Table 1. Values at Risk - SSGIC Fire Planning

VALUE	Priority	Methodology	Tasks	Lead
Hydropower	High	CDF	Validate methods/data, explore local data sources	Drum
Fire-flood watersheds	Drop			
Soil erosion	High	CDF	Substitute local soils data for STATSGO, where possible	Lineback
Water storage	High	CDF	Validate methods/data, explore local data sources	Drum
Water supply	High	CDF	Validate methods/data, explore local data sources	Drum
Scenic	Include as part of recreation			
Timber	High	CDF, USFS	Utilize CDF method for private, USFS method for other	Gelobter, Marose
Range	High	CDF, apply to grazed lands only	Identify grazed areas, use parcel data for private (?). Use WHR types to assign $ values. BLM – supply allotments to Karen	?????
Air quality	Drop			
Historic buildings/arch	Phase II			
Recreation	High	Loss of unique opportunities, impact on VQOs (scenic)	Explore use of VQOs for scenic, provide data/maps for unique rec opportunities that could be lost by fire	Jump
Structures	High	Enhance CDF	Explore potential for utilizing parcel data, tag urban interface areas	Marose, Geary
Non-game wildlife	High	Unique methods for important species	Determine key species, develop methods, determine data sources	Conover, NPS
Game wildlife	Phase II			
Infrastructure	Phase II			
Fire fighter safety	High	????	Can we develop a methodology?	Gelobter
Human life	Phase II	????	Develop methodology based on fuels, distance to main highway, season of occupation, etc.	
Urban interface	Include as part of structures			
Economic	Phase II	????	Develop methodology based on road closures, recreation loss, suppression costs, etc.	